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MODELING AND SIMULATION

ACTION COMPONENT(S):

OCS, NIPE, OSI

USER COMPONENT(S):

OSI, OSR, NIPE, OSA, OSP

OBJECTIVES:

The objective of this project is to provide ADP support in simulating environments of interest to intelligence analysts or mission planners using a mathematical model to represent the parameters being studied. The availability of such models provides an additional problem solving tool and assists the analyst in understanding complex situations. Three modeling activities are discussed below:

- air defense systems analysis
- a strategic arsenal exchange model
- an econometric model.

DESCRIPTION:

Air Defense Systems. Simulation models of various levels of sophistication are available to assist in developing mission planning tools and aids for air defense analysis. One simulation model soon to undergo tests determines the probability that a high altitude reconnaissance vehicle penetrating denied territory will survive attacks by the hostile air defense system. The model will consider various types of vehicles and environments, alternate routes, and penetrator electronic countermeasures to increase the probability of survival. Another technique is to simulate electronic countermeasure devices on aircraft as an aid in antenna design. Through studies of trajectories of air-to-air and surface-to-air missiles in an attack configuration, including determination of points of closest approach, evasive tactics can be programmed for guidance systems. Missile simulation models are also being developed to determine trajectories from data which describes the missile characteristics and initial launch conditions.

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Strategic Arsenal Exchange Model. This activity encompasses the development and exploitation of the two-sided strategic exchange model. It provides a "war gaming" capability with a flexibility to include factors for relative uncertainty with respect to force structuring, various scenario options, and budgetary constraints. Several cases have been run against this model and analyzed. There are plans to develop new routines within the existing model framework.

Econometric Model. An econometric model of Soviet planning has been formulated to simulate the input and output of various sectors of production in the Soviet economy. The model has been formulated to be solved with linear programming techniques.

CHRONOLOGY:

Initiated: FY-66
Operational: FY-67
Operational Evaluation: Various

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